UNIVERSAL WASTE MANAGEMENT
(Waste Batteries, Fluorescent Bulbs, Pesticides and Mercury Thermostats)

NPS facilities generate many potentially hazardous wastes. A number of wastes, are now required by law to be recycled. The Universal Waste Rule is a modification of the Hazardous Waste Rules, enacted under the Resource Conservation and Recovery Act (RCRA), which are designed to reduce regulatory management requirements to foster the environmentally sound recycling or disposal of certain categories of commonly generated hazardous wastes.

The Universal Waste Rules streamlined hazardous waste regulations that govern the collection and management of certain widely generated wastes. To date, EPA has as identified batteries, thermostats, pesticides, and certain lamps as universal wastes. (Note: Pesticides are discussed in detail in the Pesticide Management EnviroCheck Sheet.)

The effect of the Universal Waste Rule is to reduce the regulatory requirements applying to the handling of these specific wastes, which otherwise would be subject to full hazardous waste regulation under RCRA. Some advantages of handling these wastes as universal waste include:

- In most states, the universal waste volume is not included when determining the hazardous waste generator status. This may allow some parks to reduce their generator status level. For example, a small quantity generator who manages part of their hazardous waste stream as universal waste may be able to become a conditionally exempt small quantity generator.
- Universal waste can be accumulated for up to one year - a longer accumulation time than that allowed for a small quantity or large quantity generator of hazardous waste [40 CFR 273.15 and 273.35].
- Less labeling is required on universal waste [40 CFR 273.14 and 273.34].
- A hazardous waste manifest is not necessary to ship universal waste [40 CFR 273.52(a)], unless it is being shipped to, or through, another state that does not recognize it as universal waste. However, shipping papers are required for universal waste if the waste is a US Department of Transportation (US DOT) hazardous material.
- A handler may use a universal waste transporter to haul the universal waste off-site [40 CFR 273, Subpart D], or, if they meet the transporter requirements, the handler may themselves transport the waste (instead of using a permitted and registered hazardous waste transporter.) If the waste is going to, or through, a state that does not recognize it as universal waste, it may be necessary to use a licensed hazardous waste transporter in that state.

Auditor's Guidelines:

Records to Review
- Transporter EPA Identification Number
- Hazardous waste manifests
- Non-hazardous disposal records
- Training records on handling and disposal
- Recycling/exchange records
- Other disposal records

Features To Observe
- Accumulation points
- Vehicles used for transport
- Universal waste storage areas (including pallets)
- Offices and divisions generating universal waste

Persons to Contact
- Facility Superintendent
- Maintenance staff
- Law enforcement staff (radio batteries)

DEFINITIONS

Destination facility: A facility that treats, disposes of, or recycles a particular category of universal waste, except those management activities described in §273.13 (a) and (c) and §273.33 (a) and (c). A facility, at which a particular category of universal waste is only accumulated, is not a destination facility for purposes of managing that category of universal waste.

Large Quantity Handler of Universal Waste: A waste generator who accumulates a total of 5,000 kilograms or more of universal waste (batteries, pesticides, thermostats, or lamps, calculated collectively) at any time. The designation as a large quantity handler of universal waste is retained through the end of the calendar year in which 5,000 kilograms or more total of universal waste is accumulated.

Small Quantity Handler of Universal Waste: A universal waste handler who does not accumulate a total of 5,000 kilograms or more of universal waste (batteries, pesticides, thermostats, or lamps, calculated collectively) at any time.

LEGAL REQUIREMENTS

Federal

Universal Waste Rule (40 CFR 273)
The universal waste regulations apply less stringent management requirements to certain hazardous wastes including batteries, fluorescent tubes, mercury thermostats, and pesticides. While lead acid batteries may be managed under this regulation, management requirements are less stringent under Title 40 of the Code of Federal Regulations, Section 266 (40 CFR 266) (see below). The following wastes are considered universal wastes and are subject to this rule:

- Hazardous waste batteries: All batteries that are hazardous waste may be managed as universal waste, including nickel cadmium batteries. This also includes lead-acid batteries that are regulated under Subpart G of 40 CFR 266. Handlers will have the option of managing lead-acid batteries under either the existing 266 system or the new universal waste rules.
- Hazardous waste thermostats: Any temperature control device that contains metallic mercury in an ampule attached to a bimetal-sensing element. Also included are mercury-containing ampules that have been removed from these thermostats. Removal must be done over a containing pan and in a manner that prevents breakage of the ampules. Note: The EPA has decided that further investigation into the issue of mercury containing lamps (fluorescent light bulbs) is necessary; therefore they have not been included in these rules at this time.
- Hazardous waste pesticides: Unused pesticides that have been suspended or canceled under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), recalled, and that are collected for discard. (Pesticides are discussed in detail in the Pesticide Management EnviroCheck Sheet).
- Hazardous waste lamps: The bulb or tube portion of an electric lighting device. Common universal waste electric lamps include, but are not limited to, fluorescent, high intensity discharge, neon, mercury vapor, high-pressure sodium, and metal halide lamps.

Spent Lead Acid Batteries Being Reclaimed (40 CFR 266, Subpart G)
Lead acid batteries are exempted from Resource Conservation and Recovery Act (RCRA) hazardous waste regulations if they are recycled or reconditioned for reuse. There are fewer management requirements for lead acid batteries under this regulation compared to managing them under the 40 CFR 273 (see above).

Mercury And Rechargeable Battery Act (Battery Act)
The Battery Act made the Universal Waste Rule effective in all 50 states but only for specified rechargeable batteries such as nickel-cadmuim (Ni-Cad) and small sealed lead acid (SSLA) units. The Act does not include non-rechargeable alkaline batteries.

State and Local

States authorized to operate their own hazardous waste programs (RCRA authorized states) may adopt the Universal Waste Rule. The rule will not take effect until the particular state adopts the program.

In those states that have **not** adopted the EPA universal waste rules, batteries, thermostats, pesticides, and fluorescent tubes must still be managed as a hazardous waste. Additionally, states that have adopted the universal waste rules may not include all of the waste categories adopted by EPA. For instance, some states do not allow fluorescent bulbs to be managed as universal waste (i.e., they may still be recycled, but will count towards a generator's monthly hazardous waste totals). States that have adopted the Universal Waste Rule may also regulate additional materials (e.g., antifreeze or cathode ray tubes) as universal wastes.

OVERVIEW OF UNIVERSAL WASTE STREAMS

Batteries
Batteries are involved in many park activities. They are used in vehicles, flashlights and radios; computers and calculators in offices; cordless power tools and pagers used by maintenance staff; and a variety of other operations.

Battery types include:

- Wet cell, lead-acid batteries used in automobiles and equipment;
- Rechargeable dry cell Ni-Cad and SSLA batteries found in hand-held radios and other equipment; and
- Nonrechargeable dry cell alkaline batteries used in flashlights, toys, radios and other equipment.

Each of these battery types has environmental and human health concerns:

- Each lead acid battery contains approximately 17.5 pounds of lead, a toxic heavy metal, and 1.5 gallons of corrosive sulfuric acid. In California, an estimated 2.4 million lead acid batteries have been disposed improperly, which is a potential release of 210,00 tons of lead and 3 million gallons of sulfuric acid to the environment.
- Cadmium in Ni-Cad batteries is a toxic heavy metal listed under the Resource Conservation and Recovery Act (RCRA).
- Although not a hazardous waste when disposed, newer alkaline batteries contain potassium hydroxide, a strong alkali that can cause severe chemical burns. Older alkaline batteries (pre-1992) may also contain mercury, a toxic heavy metal (note: these batteries are no longer produced).

Used alkaline batteries are typically not regulated as a hazardous waste. Small quantities may be disposed of in the regular trash although it is preferred that they are recycled. Larger quantities (e.g., from fire and rescue operations) should be disposed of through a used battery recycler.

Fluorescent Lamps
Fluorescent lamps are a potential hazardous waste as a result of their mercury content (a listed hazardous waste). The Universal Waste Rule exempts lamps from hazardous waste requirements, provided that universal waste requirements are followed. Lamps included under the Universal Waste Rule are fluorescent, high intensity

discharge, neon, mercury vapor, high-pressure sodium, and metal halide lamps. These types of lamps are commonly found in street lamps, large hangars, and office space. Some manufacturers (e.g., Philips Lighting ALTO, or "Green Tips") produce low mercury content tubes that may be disposed of in the trash. (Note: The NPS prefers that even low mercury lamps be recycled.)

Thermostats
As with fluorescent lamps, thermostats that contain mercury are also a potentially hazardous waste. Universal Waste Rule requirements applicable to fluorescent lamps (see above) are also applicable to such thermostats.

COMPLIANCE REQUIREMENTS

Universal Waste Handler Status

Universal waste handlers are prohibited from *disposing* of universal waste. There are two levels of universal waste handlers - small quantity handlers and large quantity handlers (see definitions above). The requirements for small quantity handlers are likely at most parks.

Do not confuse "universal waste handler" levels with the hazardous waste generator status levels (e.g., small quantity generator and large quantity generator).

Storage and Handling Practices

Universal waste handlers must contain any universal waste that shows evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. The designated container must be closed, structurally sound, compatible with the contents of the waste, and must lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions.

Universal waste handlers must immediately clean up and place in a container any lamp that is either broken, or that shows evidence of breakage, leakage, or damage, that could cause the release of mercury, or other hazardous constituents, to the environment. Containers must be closed, structurally sound, compatible with the contents of the lamps, and must lack evidence of leakage, spillage or damage that could cause leakage or releases of mercury or other hazardous constituents to the environment under reasonably foreseeable conditions.

Labeling and Accumulation

Each universal waste or container holding the waste must be labeled with the words "Universal Waste-Batteries," "Universal Waste-Mercury Thermostats," etc.

Universal wastes may be accumulated for one year from the date the waste was generated. There must be a mechanism in place to demonstrate how long the waste has been stored. This can be done by dating the waste container or the individual item, or maintaining an on-site inventory system.

Recordkeeping

Large quantity handlers of universal waste (those who accumulate more than 5000 kg of UW at any time) should keep records of their universal waste shipments. The record can take the form of a log, manifest, invoice or other shipping document, and should include the following:

- The name and address of the facility where the waste was sent;
- The quantity of each type of waste sent; and
- The date of shipment.

Records must be kept for at least 3 years.

Training

Universal waste handlers must have training on the proper waste handling and emergency procedures appropriate to the type(s) of universal waste handled at the park. Since training is required, it is suggested that, while not a specified recordkeeping requirement (see below), the park should maintain records that indicate the appropriate staff have been identified and trained accordingly.

Spill Prevention and Response

Universal waste handlers must immediately contain all releases of universal wastes and other residues from universal wastes. They must determine whether any material resulting from the release is hazardous waste, and if so, must manage the hazardous waste in compliance with all applicable requirements of 40 CFR parts 260 through 272.

Shipping

A small quantity handler of universal waste is prohibited from sending or taking universal waste to a place other than another universal waste handler, or, a destination facility. Before shipping universal waste, handlers must ensure that the receiving handler agrees to accept the shipment.

Anyone transporting universal must comply with the transporter requirements (40 CFR 273, Subpart D) and Department of Transportation (DOT) regulations. A transporter may be an independent shipper contracted to transport the waste, or may be a handler who self-transports the waste.

The basic approach to transportation under the universal waste system is that no hazardous waste manifest is required, and transporters must comply with the DOT requirements that would be applicable to the waste if it were being transported as a product. For example, if transporting universal waste batteries, the transporter must comply with the appropriate DOT requirements, based on whether the particular battery type is a DOT hazardous material, and if so, which DOT hazardous material requirements apply to the specific battery type.

A universal waste handler who transports their own waste becomes a transporter for those activities, and is subject to applicable DOT requirements and the requirements of Subpart D of 40 CFR 273, which consist of the following sections.

- *Applicability* (40 CFR 273.50), explains to whom the transporter requirements apply.
- *Prohibitions* (40 CFR 273.51), prohibits transporters from disposing of, diluting, or treating, universal waste.

- *Waste management* (40 CFR 273.52), explains that transporters must comply with applicable DOT requirements if the waste they are transporting is a hazardous material under DOT regulations.
- *Accumulation time limits* (40 CFR 273.53), notes that transporters may store waste for up to ten days at a transfer facility during the course of transportation. Transfer facilities are transportation related facilities such as loading docks, parking areas, and storage areas. If a transporter stores waste for more than ten days at one location, the transporter must comply with the appropriate universal waste handler rules while storing the waste. (NOTE: This section would not likely apply to a self-transporter.)
- *Respond to releases* (40 CFR 273.54), requires transporters to immediately contain any releases of universal waste and to handle residues appropriately.
- *Off-site shipments* (40 CFR 273.55), prohibits transporters from transporting universal waste to any place other than a universal waste handler, destination facility, or foreign destination.

POLLUTION PREVENTION

Batteries

- Properly maintain batteries to assure the longest possible life. Periodically check unsealed lead acid battery water/electrolyte levels using a battery tester available from the local auto parts store.
- Follow charging and discharging instructions for rechargeable batteries.
- Purchase batteries from companies that will pick up used batteries and transport them to a recycling facility, rather than having to use a recycling vendor.
- Use a turnkey recycling program (one-for-one). Do not stockpile used batteries.
- Use non-battery powered equipment when possible.
- Purchase solar powered and rechargeable batteries when feasible.
- Switch off battery powered equipment when not in use.
- Store spent batteries inside or undercover, away from the elements.

Fluorescent Tubes

- Store spent lamps to prevent breakage; otherwise broken lamps must be handled as hazardous waste.
- Purchase low mercury-content tubes to reduce the amount of hazardous materials in the waste stream.
- Recycle all bulbs, including low-mercury bulbs that would not be considered “hazardous” for mercury.

FOR MORE INFORMATION

- RCRA/UST, Superfund, EPCRA Hotline. 1-800-424-9346.
- Rechargeable Battery Recycling Corporation provides specific recycling locations for recycling Ni-Cad batteries. 1-800-8-BATTERY.
- Philips ALTO Lamp Technology (low mercury content lamps)
- Management of Spent Mercury-Containing Lamps & Other Hazardous Waste Lamps, Contact: Robin Heston, New Jersey DEP 609-984-6650.

*Generators of universal waste fall into two regulatory categories - Small Quantity **Handlers** and Large Quantity **Handlers** (not to be confused with Small or Large Quantity **Generators** of hazardous waste). Due to the nature of NPS facilities, it is likely that their operations will trigger only the Small Quantity Handler requirements. Therefore, only those accumulation and handling requirements addressed in the following checklist.*

	CHECKLIST ITEM	PRIORITY	NOTES
	Universal Wastes (Used Batteries, Burned Out Fluorescent Bulbs, Waste Pesticides, Waste Mercury Thermostats)		
1.	Park staff have determined whether their state has an authorized universal waste program and, if so, which wastes are included. [BMP]	3	
2.	If the park is a small or large quantity generator of *hazardous* waste, universal wastes generated at the park are recycled in accordance with state universal waste program requirements. [40 CFR 273]	2	
3.	If the park is a conditionally exempt small quantity generator of *hazardous* waste, universal wastes generated at the park are recycled in accordance with state universal waste program requirements. [BMP]	3	
	Accumulation		
4.	No more than 5,000 kilograms of universal waste (batteries, lamps, thermostats, and pesticides, calculated collectively) is accumulated at the park at any one time. [40 CFR 273.9]	2	
5.	Universal waste batteries, lamps, thermostats, or pesticides, do not accumulate longer than one year from the date they become wastes, unless storage is necessary to facilitate proper recovery, treatment, or disposal (i.e., recycler retrieval). [40 CFR 273.15(a, b)]	2	
6.	The length of time universal wastes have accumulated is demonstrated by one or more of the following systems: • Placing the waste in a container and marking or labeling the container with the earliest date that any universal waste in the container became a waste or was received; or • Marking or labeling each individual item with the date it became a waste or was received; or • Maintaining an inventory system on-site that identifies the date each universal waste became a waste or was received; or • Any other method that clearly demonstrates the length of time that the universal waste has accumulated from the date it becomes a waste or is received. [40 CFR 273.15(c)]	2	
	Spills and Releases		
7.	Universal wastes are managed in a way that prevents releases of any universal waste or component of a universal waste to the environment. [40 CFR 273.13(a)]	1	
8.	All releases of universal wastes and other residues from universal wastes are immediately contained. [40 CFR 273.17(a)]	2	

	CHECKLIST ITEM	PRIORITY	NOTES
9.	If a release does occur, a determination is made regarding whether any waste generated as a result of the release is a hazardous waste, and if so, manages the hazardous waste in compliance with all applicable requirements of 40 CFR parts 260 through 272. [See the Hazardous Waste Management Check Sheet.]	2	
	Employee Training		
10.	Employees who handle or have responsibility for managing universal wastes are informed on proper handling and emergency response procedures of these universal wastes. [40 CFR 273.16]	2	
	Recordkeeping		
11.	Records of off-site shipments of all shipments of universal wastes are properly maintained. The records may include the following: • Quantity of shipments; • Date of shipments; • Name of transporter and destination facility; and • Certificates of recycling, if provided by the destination facility. [BMP]	3	
	Shipment Requirements		
12.	Universal waste is sent only to another universal waste handler or an approved recycling/disposal facility (i.e. a "destination facility"). [40 CFR 273.18(a)]	2	
13.	If universal wastes fit the description of a hazardous material in accordance with DOT regulations 49 CFR 171.8, waste shipments are packaged, labeled, marked, and placarded in accordance with 49 CFR parts 171 through 180. [40 CFR 273.18(c)]	2	
14.	If park staff self-transport the park's universal waste, they comply with regulations applicable to a universal waste transporter. [40 CFR 273.50]	2	
	Batteries		
15.	Any universal waste battery that shows evidence of leakage, spillage, or damage that could cause leakage under reasonable foreseeable conditions is in a closed, structurally sound, compatible container that would not leak under reasonable foreseeable conditions. [40 CFR 273.13(a)(1)]	1	
16.	Universal waste batteries (i.e., each battery), or a container in which the batteries are contained, are labeled or marked clearly with any one of the following phrases: "Universal Waste – Battery(ies)," or "Waste Battery(ies)," or "Used Battery(ies)". [40 CFR 273.14(a)]	2	
	Lead-acid Batteries		
17.	Batteries with hazardous constituents are either • Reclaimed or recycled, or • Managed as hazardous waste. (See the Hazardous Waste Check Sheet.) [40 CFR 266, Subpart G]	2	
	Alkaline Batteries		
18.	Alkaline batteries are recycled. [BMP]	3	

	CHECKLIST ITEM	PRIORITY	NOTES
	Universal Waste Lamps *Universal waste lamps include fluorescent, high intensity discharge, neon, mercury vapor, high-pressure sodium, and metal halide lamps.*		
19.	Lamps managed as a universal waste are contained in containers or packages that are structurally sound, adequate to prevent breakage, and compatible with the contents of the lamps. Such containers and packages are closed and lack evidence of leakage, spillage or damage that could cause leakage under reasonably foreseeable conditions. [40 CFR 273.13(d)(1)]	2	
20.	Any lamp managed as a universal waste that is broken, or shows evidence of breakage, leakage, or damage that could cause the release of mercury or other hazardous constituents to the environment, is immediately cleaned up and placed in a container. Containers are closed, structurally sound, compatible with the contents of the lamps and lack evidence of leakage, spillage or damage that could cause leakage or releases of mercury or other hazardous constituents to the environment under reasonably foreseeable conditions. [40 CFR 273.13(d)(2)]	2	
21.	Each universal waste lamp or a container or package in which such universal waste lamps are contained is labeled or marked clearly with one of the following phrases: "Universal Waste - Lamp(s)," or "Waste Lamp(s)," or "Used Lamp(s)". [40 CFR 273.14(e)]	2	
22.	Low-mercury fluorescent lamps (e.g., Philips Alto bulbs) are recycled. [BMP]	3	
	Mercury Thermostats		
23.	Each universal waste thermostat or container in which the thermostats are contained, is labeled or marked clearly with any one of the following phrases: “Universal Waste-Mercury Thermostat(s)," or “Waste Mercury Thermostat(s)," or “Used Mercury Thermostat(s).” [40 CFR 273.14(d)]	2	
24.	Any universal waste thermostat that shows evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions in a container, is placed in a container that must be closed, structurally sound, compatible with the contents of the thermostat, and must lack evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions. [40 CFR 273.13(c)]	2	
	Pesticides *Waste pesticides are discussed in the Pesticide Management EnviroCheck Sheet.*		